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DEVICE FOR INJECTING A FILLING MATERIAL INTO FRENCH FRIES

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DEVICE FOR INJECTING A FILLING MATERIAL INTO FRENCH FRIES

[Pommes Frites Applikationsfüllungsvorrichtung]

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Description /1*

The present invention relates to the injection of a thin- to thick-bodied filling material into a French fry.

French fries are known to have different kinds of shapes, thus there are round, hexagonal and octagonal French fries. After production, these French fries are frozen and subsequently prepared by the final consumer in a deep fryer; after the fat has been allowed to drain off, they are generally improved by seasoning them to taste, such as by adding salt or other spices. The French fries are generally served with sauces, such as mayonnaise and ketchup, either topping the French fries with said sauces or serving them on the side.

According to the present useful invention, the center (2) of the French fry (1) is filled in the longitudinal direction with different filling materials.

In this manner, it is possible to inject any conceivable filling materials into the French fry (1).

The consumer is then able to choose between French fries with different fillings and different flavors.

In addition, since the French fries can be eaten without having to add sauces, etc., to them, the French fries do not become soggy. /2

It is, of course, also possible to serve additional ketchup, mayonnaise or curry sauces as usual on the side as a flavor enhancer; however, given the tasty fillings, this is superfluous.

Furthermore, the manufacturer of such French fries can determine the thickness, i.e., the diameter of the filling material to be injected, thus making it possible for French fries containing only a small amount of the filling material or French fries containing larger amounts of the filling material to be offered.

The present useful invention also offers both the manufacturer and the ultimate consumer a great variety of flavors that can be varied to meet different tastes in different countries. In addition, different flavors can be used for children and adults.

The manufacture of the French fries and the preparation in the deep fryer are carried out in the conventional manner.

During the production of the French fries, the potato or the potato mass (3) is pressed through the shaping grid (4) and exits the shaping grid (4) at the exiting point (5). This shaping grid (4) can be disposed upstream of the terminal grid of the French fry machine or it can instead be incorporated into said machine.

The cutting and injecting device (7) is placed into the cone (6) of the shaping grid (4) at a point to be selected in the cone (6), preferably one fifth down from the top of the cone.

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* [The numbers in the right margin indicate pagination of the original text.]

The cutting and injecting device comprises the conically or elliptically tapering knife (8) /3
which is hollow (9). Rigidly connected to the most pointed part of the knife (8) is the injection head (10) which may be round or have any other conceivable shape.

Since this injection head (10) creates a cavity for the filling material (22) in the center of the French fry by pushing the French fry past this injection head (10) and the nozzle (11), the injection head (10) must have a streamlined shape so as to be able to reduce resistance. Therefore, ball-shaped designs with a cylindrical end that tapers to a point and any other geometrically conceivable shapes should be used.

In the shaping grid (4), the knife or knives (8) with the injection head (10) used for cutting a slit into the French fry (1) is/are rigidly connected to the cone (6) at the previously identified point or points (22) so as to facilitate the injection procedure.

Each opening (6) of the shaping grid (4) has this type of cutting and injecting device (7), (8) and (10) disposed in it.

The injection head (10) comprises the injection nozzle or nozzles (11), with its exit/their exits being located in the vertical direction of the French fry.

At the point at which the cutting knife (8) with the injection nozzle (10) is attached inside the cone (6) of the shaping grid (4), a hole (12) has been drilled. This hole (12) in the shaping grid (4) connects the cutting and injecting device (7 and 8) and (10) with the delivery tube (13) which can be made of a variety of tubular materials, etc.

On the cutting and injecting device (7, 8 and 10) in each cone/opening (6) of the shaping grids (4), the bar (15) is rigidly connected to the locking bar (17) and the pressure spring (18), /4
which locking bar runs in the guide groove (16). Once the potato/potato mass (3) is fed via the shaping grid (4) into the cone (6), it must pass the bar (15). Through the pressure of the potato/potato mass (3), the bar (15) is pushed into the direction of the cutting and injecting device (7, 8 and 10) so that by means of the pressure spring (19) [sic; 18], the hole (18) [sic; 12] disposed in the rigidly connected locking bar (17) is opened to allow the flow (12) of the filling material to the cutting and injecting device (7, 8 and 10), at this point initiating the injection of the filling into the French fry (1). Once the pressure of the potato mass (3) stops, the spring (19) extends until the potato mass (3) again exerts enough pressure so that the injection procedure is repeated.

As an alternative, the procedure described above can also be carried out by a scanner (20) that can be integrated into each opening (6) of the shaping grid (4). The scanner (20) is disposed on the side of the transport chute (6) and signals to the injection nozzle (11) that the French fry (1) should be filled over a length of, for example, 6 or 4 cm. If no potato mass (3) passes through, no injection takes place. By means of the scanner (20) with the scanner window (21), it is possible to fill the French fry (1), e.g., only after the injection head (10) with the injection

nozzle (11) has covered a distance of more than 1 cm from one end of the length of the French fry (1). Thus, via the appropriately set scanner (20), it is possible, e.g., to fill a French fry over a length of 6 cm or 4 cm. This means that at both ends, the French fry is not injected with the filling material under a length of approximately 1 cm. This has the advantage that via the exit cone (5) both ends of the French fry (1) with the opening (2) in the center are closed.

The tubes (13) are connected to the filling material station (14) which is pressurized and works under pressure.

This filling material station (14) operates electrohydraulically with an integrated control /5
that is connected to the overall control system of the French fry manufacturing machine.

During the process of manufacturing the French fries, the potato or the potato mass (3) is pressed into the shaping grid (4). At this point, the French fry mass (3) or the potato piece (3) passes through the cone (6) of the shaping grid (4). The potato mass or the potato piece (3) encounters the cutting knife (8). Because the French fry mass/potato piece (3) passes through [the shaping grid] under pressure, the French fry is conically opened by means of the cutting knife (7) [sic; 8], with the injection head (10) creating a space in the center of the French fry, thereby ensuring that in the following step, the French fry is prepared for injection with the filling material (22) by means of the injection nozzle (11). After exiting from the cutting and injecting station (7 and 10), the French fry that has been cut at this point is closed by the continuous conical exiting movement of said French fry, thus ensuring that the filling material (22) is enclosed in the longitudinal direction in the opening (2) in the center of the French fry (1).

The filling duration is interrupted by the locking device (15-19) and opened as the pressure increases. Alternatively, if a scanner (20) is used, it is possible to solve this procedure by means of the scanner (20) and the scanner window (21).

All openings (6) of the shaping grid (4) are fitted with at least one knife injection nozzle [sic] (7 and 10).

As to the design, it is conceivable to allow the French fry to be injected [with different filling materials] in different places, thereby producing a variety of flavors.

In this case, it will be necessary to position the cutting and injecting device (7 and 8 and /6
10) at different points of each opening or cone (6) of the shaping grid (4), thus making it possible to combine, depending on the choice [of filling material], several different flavors in one French fry.

The cutting knife (8) has a cavity (9) through which the filling material (22) reaches the French fry via the external tube (13), the injection head (10) and the injection nozzle (11).

The size of the opening in the injection nozzle (11) can vary so as to allow the filling material to be injected in a thin or thick stream.

After the French fry (1) has exited the shaping grid (4), the procedure of filling the French fry with the filling material (22) is concluded.

The French fries are then frozen and are ready for distribution.

Claims /7

1. A device for filling French fries, characterized in that the cutting and injecting devices (7, 8 and 10) are rigidly connected to the specific points in the shaping grid (4) with its cones/openings (6).

2. The device for filling French fries as in Claim 1, characterized in that the injecting device (7) which comprises a conically to elliptically tapering knife (8) which is hollow (9) is rigidly connected to the injection head (10).

3. The device for filling French fries as in Claims 1-2, characterized in that the injection head (10) is connected to the nozzle (11) in various ways.

4. The device for filling French fries as in Claims 1-3, characterized in that the cutting /8
knife (8) with its cavity (9) is connected to the holes (12) via the external tube (13).

5. The device for filling French fries as in Claims 1-4, characterized in that the holes (12) and the external tubes (13) are connected with the filling material station (14).

6. The device for filling French fries as in Claims 1-5, characterized in that the filling material station (14) is operated electrohydraulically with an integrated control.

7. The device for filling French fries as in Claims 1-6, characterized in that the cutting and injecting device (7, 8 and 10) can be positioned at different points of the opening/cone (6) of the shaping grid (4).

8. The device for filling French fries as in Claims 1-7, characterized in that both the openings -- cones -- (6) in the shaping grid (4) and the cutting and injecting device (7 and 8) with the injection heads (10) and the injection nozzles (11) with the holes (12) and the external tubes (13) used have different sizes and diameters.

9. The device for filling French fries as in Claims 1-8, characterized in that the bar (15) is rigidly connected to the locking bar (17) and that, in the guide groove (16), said bar allows the /9
filling material (22) to enter or prevents said filling material from reaching the cavity (9) of the cutting and injecting device (7, 8 and 10) through the hole (18) via the pressure spring (19), on which the potato/potato mass (3) exerts pressure on the bar (15).

10. The device for filling French fries as in Claims 1-9, characterized in that, as an alternative, the scanner (20) that is integrated into the shaping grid (4), via the scanner window (21), controls the injection of the French fries (1) through the injection head (10) with the injection nozzle (11).

11. The device for filling French fries as in Claims 1-10, characterized in that the filling duration is interrupted by the locking device (15-19) and opened as the pressure decreases.

12. The device for filling French fries as in Claims 1-11, characterized in that, controlled by the scanner (20), the filling material (22) is injected via the scanner window (21) into the French fry (1) at the specified point (2) or at other conceivable points.

13. The device for filling French fries as in Claims 1-12, characterized in that all openings/cones (6) of the shaping grid (4) are fitted with one or a plurality of cutting and injecting devices (7, 8 and 10) and the appropriate locking devices (15-19) or, as an alternative, scanners (20) with the scanner windows (21).

14. The device for filling French fries as in Claims 1-13, characterized in that it is possible to incorporate a plurality of cutting and injecting devices (7, 8 and 10) with different filling materials (22) into each opening (6) of the shaping grid (4). /10

Fig. 1

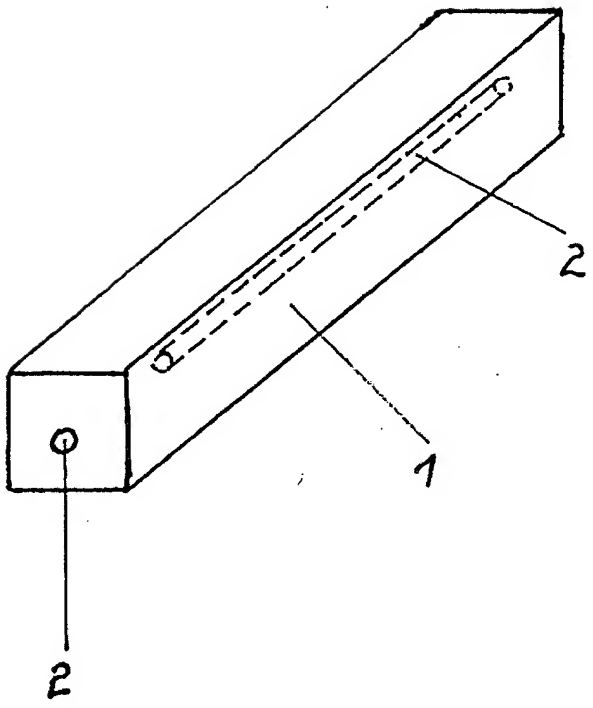


Fig. 2

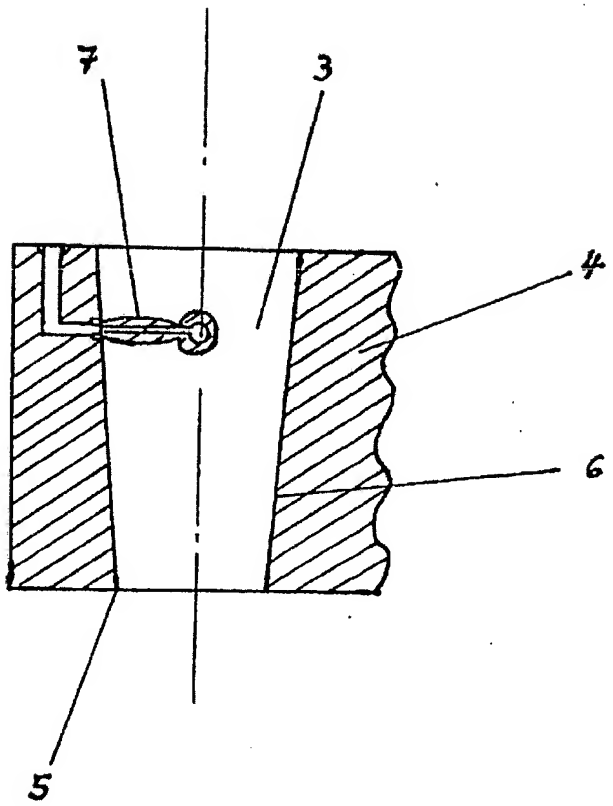


Fig. 3

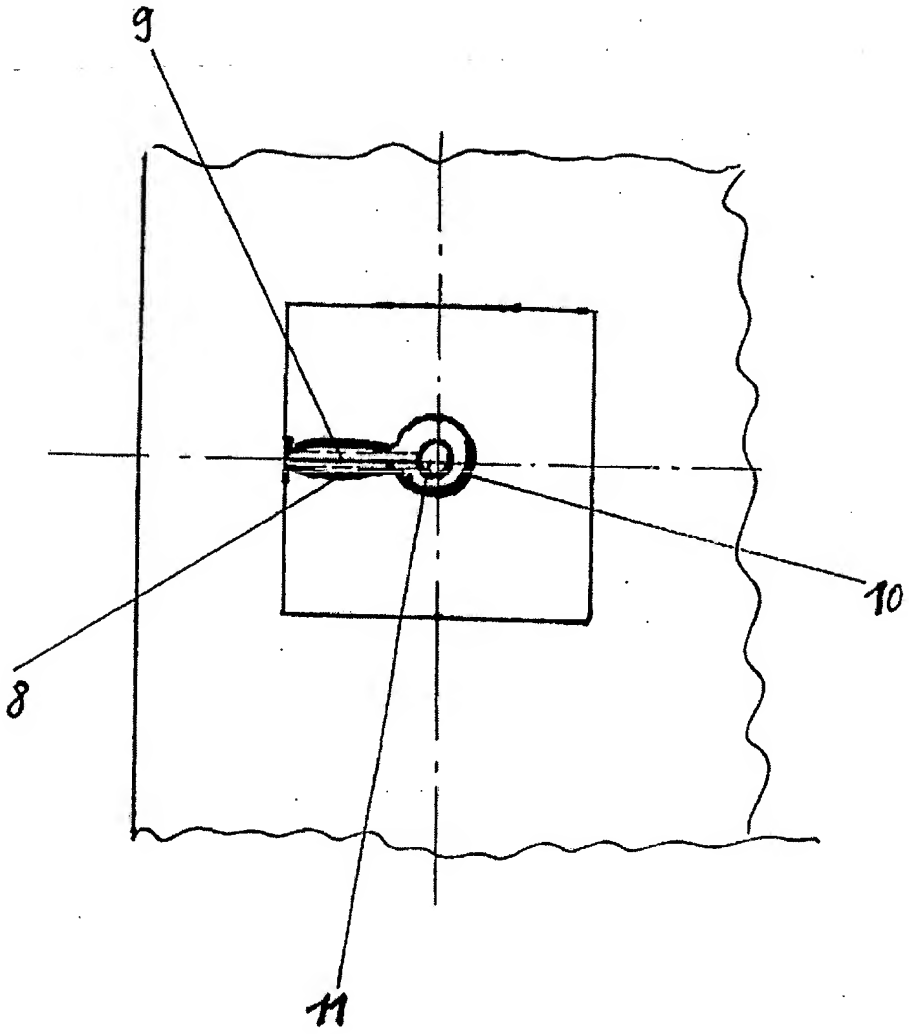


Fig. 4

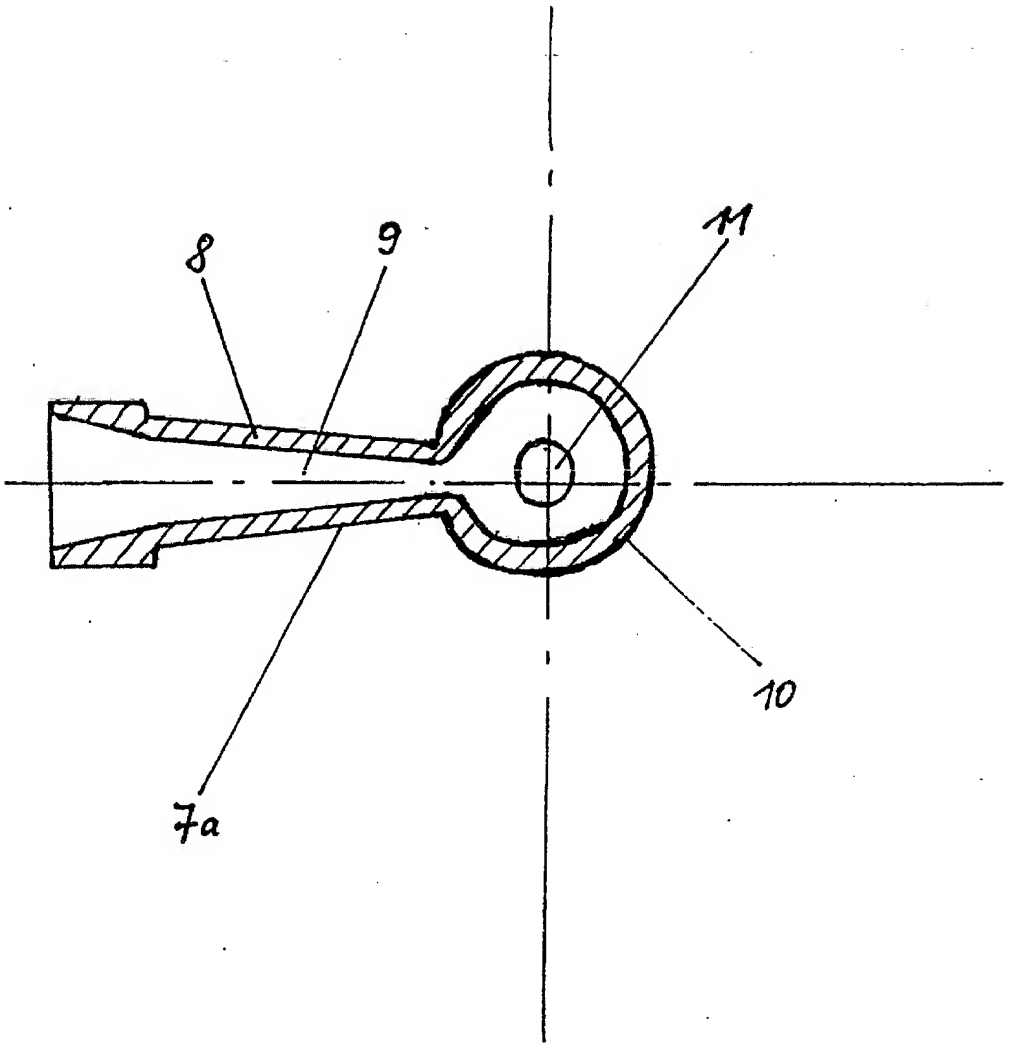


Fig. 5

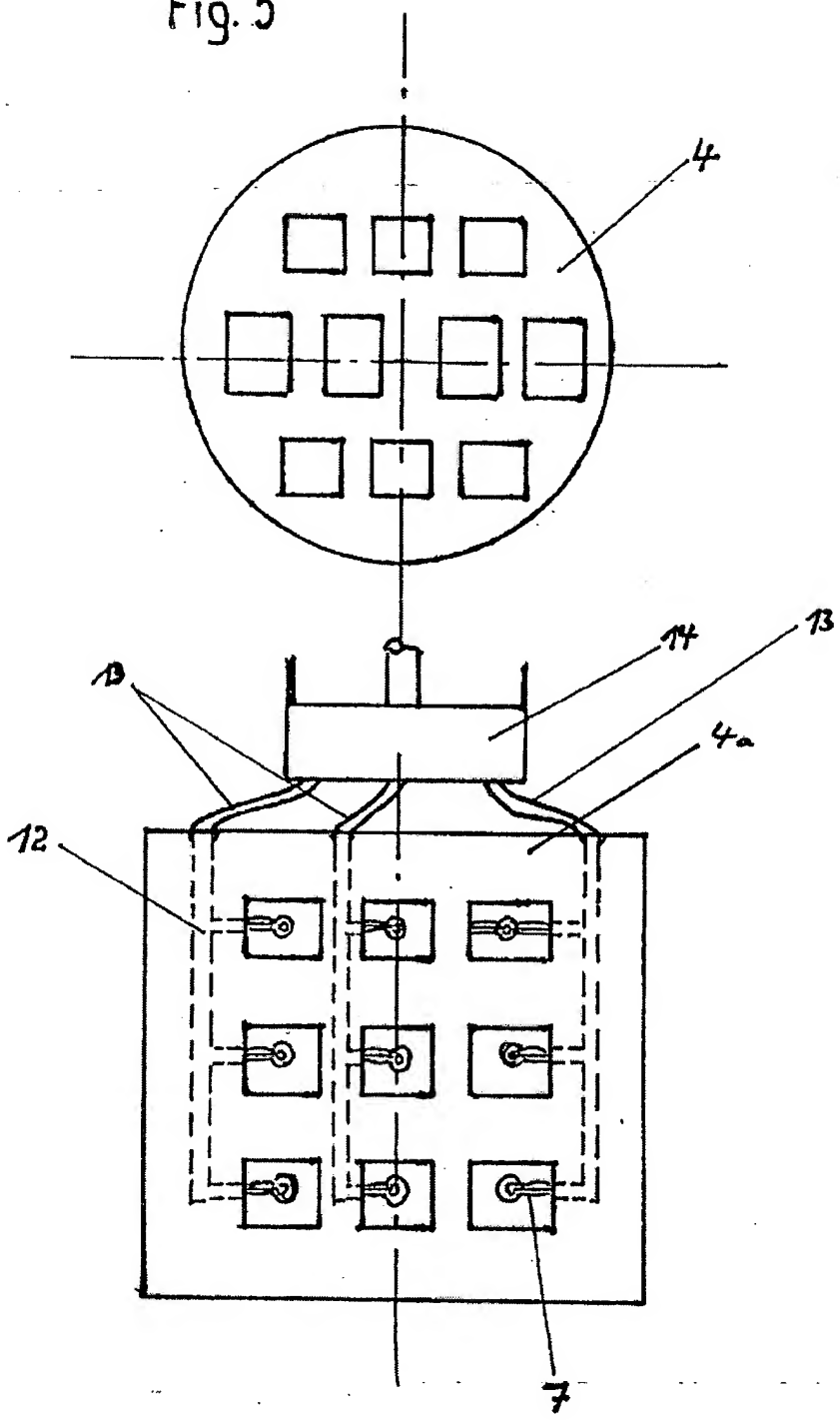


Fig. 6

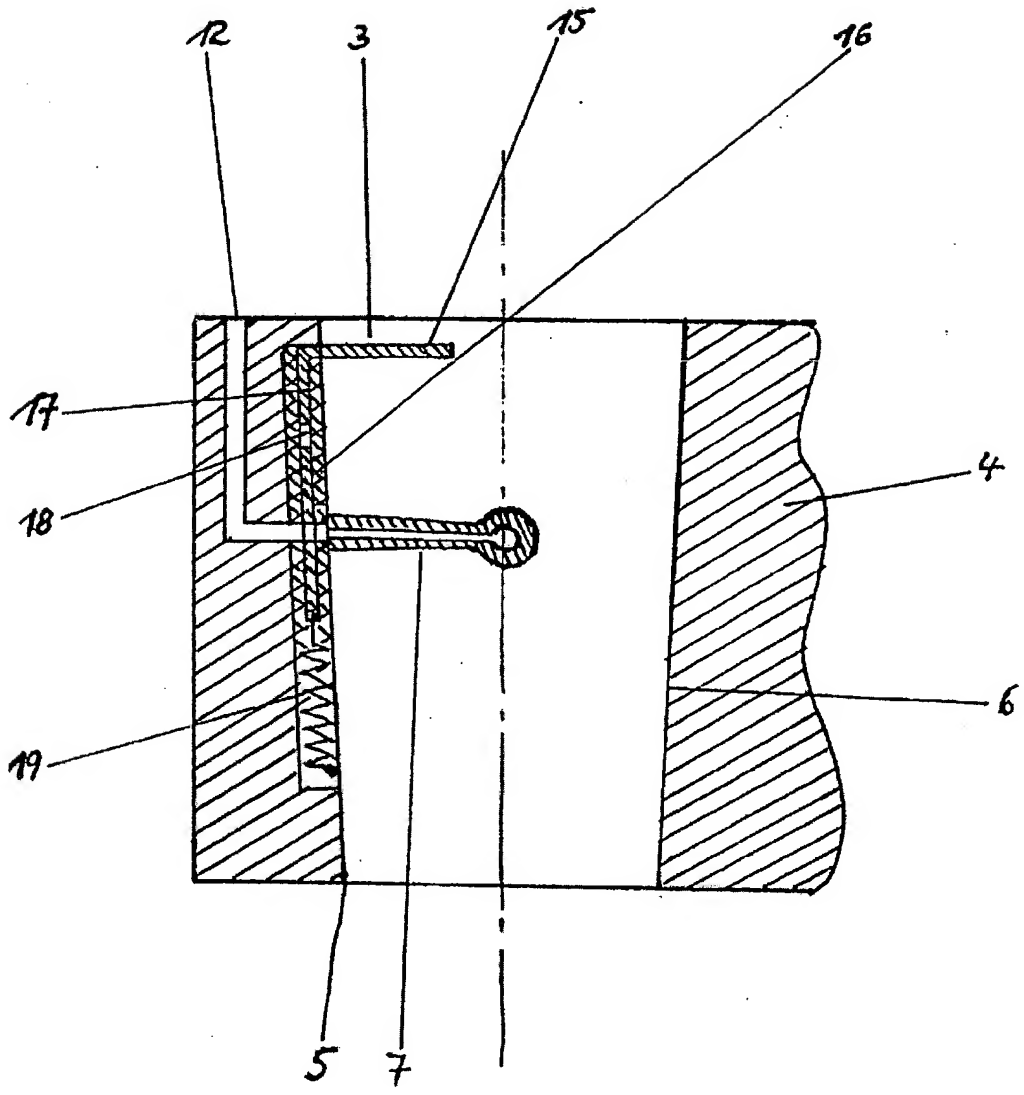
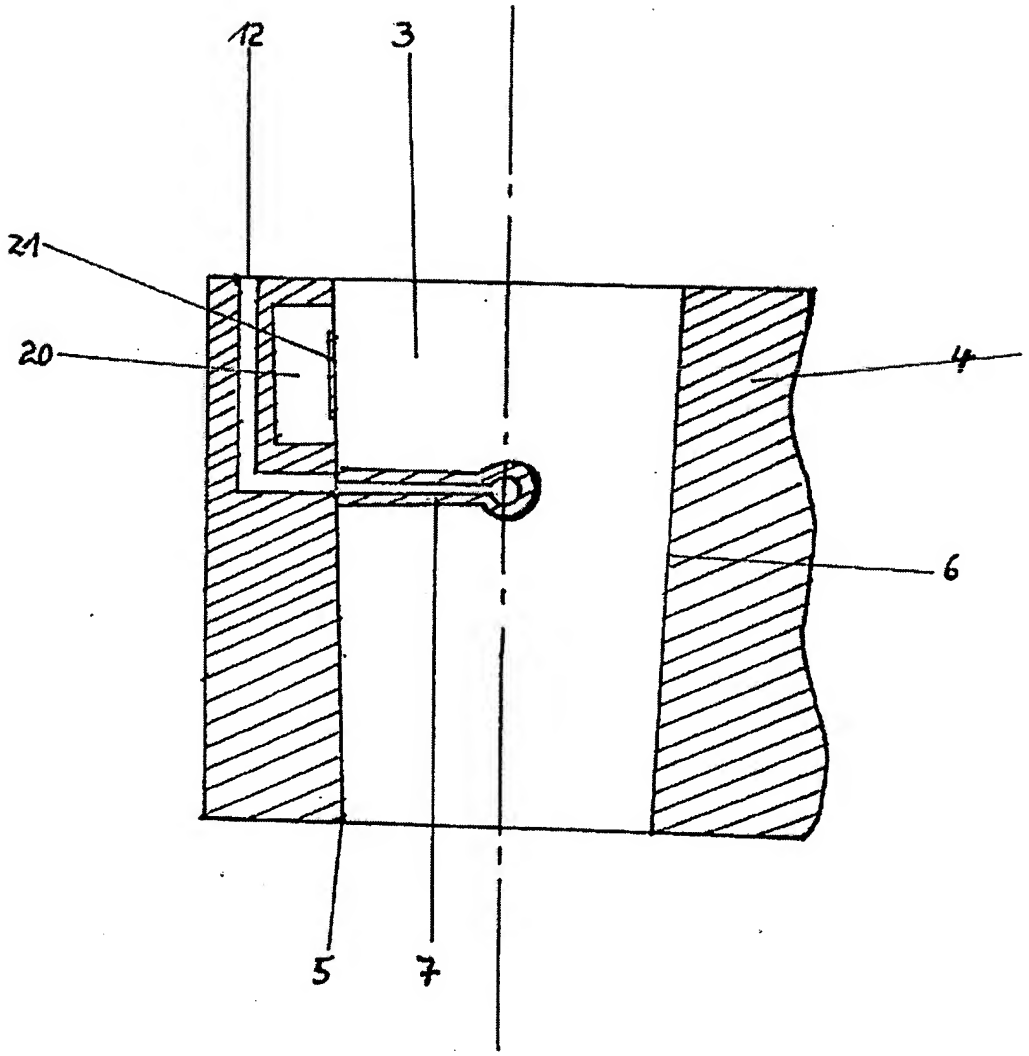


Fig. 7



INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A23P1/12 A23L1/217 B29C47/04

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 A23P A23L B29C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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A	FR 1 543 384 A (L.D. MAURICE) claim 1; figure	1,9-11
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A	DE 35 15 783 A (ROESSNER WILLI DR ING) 6 November 1986 (1986-11-06)	

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☒ Patent family members are listed in annex.

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7 January 2000	15/03/2000

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information on patent family members

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